

## Monitor Your Diabetes

### Check Your Blood Glucose Levels

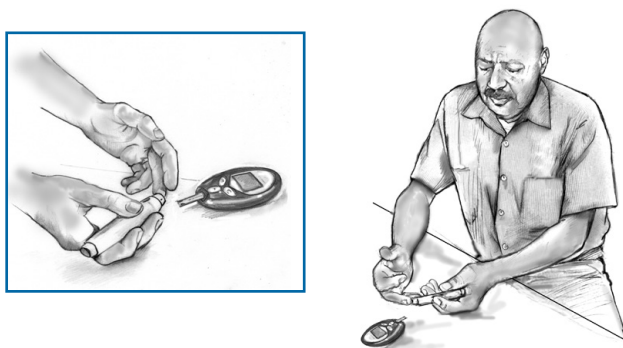
Checking and recording your blood glucose levels can help you monitor and better manage your diabetes. If your blood has too much or too little glucose, you may need a change in your healthy eating plan, physical activity plan, or medicines.

A member of your health care team will show you how to check your blood glucose levels using a blood glucose meter. Your health care team can teach you how to

- prick your finger to get a drop of blood for testing
- use your meter to find out your blood glucose level from your drop of blood

Read more in *Continuous Glucose Monitoring* at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).

Your health insurance or Medicare may pay for the blood glucose meter and test strips you need.



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Checking and recording your blood glucose levels can help you better manage your diabetes.

Ask your doctor how often you should check your blood glucose levels. You may need to check before and after eating, before and after physical activity, before bed, and sometimes in the middle of the night. Make sure to keep a record of your blood glucose self-checks.

### **Target Range for Blood Glucose Levels**

Most people with diabetes should try to keep their blood glucose levels as close as possible to the level of someone who doesn't have diabetes. This normal target range is about 70 to 130. The closer to normal your blood glucose levels are, the lower your chance of developing serious health problems.

Ask your doctor what your target levels are and when you should check your blood glucose levels with a meter. Make copies of the chart in the section “Your Diabetes Care Records” to take with you when you visit your doctor.

Reaching your target range all of the time can be hard. Remember, the closer you get to your target range, the better you will feel.

### **The A1C Test**

Another test for blood glucose, the **A1C**—also called the **hemoglobin A1C** test, **HbA1C**, or **glycohemoglobin** test—is a blood test that reflects the average level of glucose in your blood during the past 2 to 3 months.

You should have the A1C test at least twice a year. If your result is not on target, your doctor may have you take the test more often to see if your A1C improves.

For the test, your doctor will draw a sample of your blood during an office visit or send you to a lab to have your blood drawn. Your A1C test result is given as a percentage. Your A1C result plus the record of your blood glucose numbers show whether your blood glucose levels are under control.

- If your A1C result is too high, you may need to change your diabetes treatment plan. Your health care team can help you decide what part of your plan to change.
- If your A1C result is on target, then your diabetes treatment plan is working. The lower your A1C result, the lower your chance of having diabetes problems.

Talk with your doctor about what your A1C target should be. Your personal target may be above or below the target shown in the chart.

A1C Targets	
Target for most people with diabetes	Below 7 percent
Time to change my diabetes care plan	8 percent or above

A1C targets can also depend on

- how long you have had diabetes
- whether or not you have other health problems

Read more about A1C targets at [www.ndep.nih.gov](http://www.ndep.nih.gov).

### **Tests for Ketones**

You may need to check your blood or urine for ketones if you're sick or if your blood glucose levels are above 240. Your body makes ketones when you burn fat instead of glucose for energy. If you have too many ketones, you are more likely to have a serious condition called **ketoacidosis**. If not treated, ketoacidosis can cause death.

Signs of ketoacidosis are

- vomiting
- weakness
- fast breathing
- sweet-smelling breath

Ketoacidosis is more likely in people with type 1 diabetes.

Your doctor or diabetes educator will show you how to test for ketones.

## Keep Daily Records

Make copies of the daily diabetes record at the end of this booklet. Then, write down the results of your blood glucose checks each day. You may also want to record what you ate, how you felt, and whether you were physically active.

Bring your blood glucose records to all visits with your health care team. They can use your records to see whether you need changes in your diabetes medicines or in your healthy eating plan.

Action Steps If You Take Insulin
Keep a daily record of <ul style="list-style-type: none"><li>• your blood glucose levels</li><li>• the times of day you take insulin</li><li>• the amount and type of insulin you take</li><li>• what types of physical activity you do and for how long</li><li>• when and what you eat</li><li>• whether you have ketones in your blood or urine</li><li>• when you are sick</li></ul>



Action Steps If You Don't Take Insulin
Keep a daily record of <ul style="list-style-type: none"><li>• your blood glucose levels</li><li>• the times of day you take your medicines</li><li>• what types of physical activity you do and for how long</li></ul>

## Learn about High and Low Blood Glucose Levels

Sometimes, no matter how hard you try to keep your blood glucose levels in your target range, they will be too high or too low. Blood glucose that's too high or too low can make you feel sick. If you try to control your high or low blood glucose and can't, you may become even sicker and need help. Talk with your doctor to learn how to handle these emergencies.

### Learn about High Blood Glucose Levels

If your blood glucose levels stay above 180 for more than 1 to 2 hours, they may be too high. See the chart on page 54. High blood glucose, also called **hyperglycemia**, means you don't have enough insulin in your body. High blood glucose can happen if you

- miss taking your diabetes medicines
- eat too much
- don't get enough physical activity
- have an infection
- get sick
- are stressed
- take medicines that can cause high blood glucose

Be sure to tell your doctor about other medicines you take. When you're sick, be sure to check your blood glucose levels and keep taking your diabetes medicines. Read more about how to take care of yourself when you're sick in the section "Take Care of Your Diabetes during Special Times or Events."

Signs that your blood glucose levels may be too high are the following:

- feeling thirsty
- feeling weak or tired
- headaches
- urinating often
- having trouble paying attention
- blurry vision
- yeast infections

Very high blood glucose may also make you feel sick to your stomach.

If your blood glucose levels are high much of the time, or if you have symptoms of high blood glucose, call your doctor. You may need a change in your healthy eating plan, physical activity plan, or medicines.

## **Learn about Low Blood Glucose Levels**

If your blood glucose levels drop below 70, you have low blood glucose, also called hypoglycemia. Low blood glucose can come on fast and can be caused by

- taking too much diabetes medicine
- missing or delaying a meal
- being more physically active than usual
- drinking alcoholic beverages

Sometimes, medicines you take for other health problems can cause your blood glucose levels to drop.

Signs your blood glucose levels may be too low are the following:

- hunger
- dizziness or shakiness
- confusion
- being pale
- sweating more
- weakness
- anxiety or moodiness
- headaches
- a fast heartbeat



If your blood glucose levels drop lower, you could have severe hypoglycemia, where you pass out or have a **seizure**. A seizure occurs when cells in the brain release a rush of energy that can cause changes in behavior or muscle contractions. Some seizures are life threatening.

If you have any of these symptoms, check your blood glucose levels. If your blood glucose levels are less than 70, have one of the following right away:

- three or four glucose tablets
- one serving of glucose gel—the amount equal to 15 grams of carbohydrates
- 1/2 cup, or 4 ounces, of fruit juice
- 1/2 cup, or 4 ounces, of a regular—nondiet—soft drink
- 1 cup, or 8 ounces, of milk
- five or six pieces of hard candy
- 1 tablespoon of sugar, syrup, or honey



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Have one of these foods or drinks when your blood glucose levels are low.

After 15 minutes, check your blood glucose levels again. Repeat these steps until your blood glucose levels are 70 or above. If it will be at least 1 hour before your next meal, eat a snack.

If you take diabetes medicines that can cause low blood glucose, always carry food for emergencies. You should also wear a medical identification bracelet or necklace that says you have diabetes.

If you take insulin, keep a prescription **glucagon** kit at home and at other places where you often go. A glucagon kit has a vial of glucagon, a syringe, and a needle to inject the glucagon. Given as a shot, the glucagon quickly raises blood glucose. If you have severe hypoglycemia, you'll need someone to help bring your blood glucose levels back to normal by giving you a glucagon shot. Show your family, friends, and coworkers how to give you a glucagon shot when you have severe hypoglycemia. **Someone should call 911 for help if a glucagon kit is not available.**

**Action Steps**  
**If You Take Insulin**

- Tell your doctor if you have low blood glucose, especially at the same time of the day or night, several times in a row.
- Tell your doctor if you've passed out from low blood glucose.
- Ask your doctor about glucagon. Glucagon is a medicine that raises blood glucose.
- Show your family, friends, and coworkers how to give you a glucagon shot when you have severe hypoglycemia.
- When you have severe hypoglycemia, someone should call 911 for help if a glucagon shot is not available.

### Action Steps

#### If You Don't Take Insulin

- Tell your doctor if you have low blood glucose, especially at the same time of the day or night, several times in a row.
- Tell your doctor about other medicines you are taking.
- Ask your doctor whether your diabetes medicines might cause low blood glucose.

Read more about low blood glucose in *Hypoglycemia* at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).



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Tell your doctor if you have low blood glucose, especially at the same time of day or night, several times in a row.